



## **The Elkhead Reservoir Project**

Past, Present and Future

Updated November 26, 2003

**This document is intended to provide readers with a general knowledge of the Elkhead Reservoir project, its origins, existing operation and factors that are influencing its future. We will update this document periodically as the direction of the pending enlargement project becomes more clear.**

### **Project History**

A water storage project on Elkhead Creek, near the City of Craig, Colorado, was reportedly first conceived in the 1940's. In the late 1960's, the Colorado Division of Wildlife (CDOW) began to consider a water storage project on Elkhead Creek to create lake fishing opportunities. The CDOW's initial project concept envisioned a reservoir storing about 5,000 acre-feet of water. However, the need for a reliable water supply to serve the Craig coal-fired power plant created an opportunity for the CDOW to partner with the developers of the power plant and create a larger reservoir. The reservoir as it currently exists was constructed and filled in 1974. The facility includes:

- an earthen embankment dam 85 feet high and 1,160 feet long
- a 36 inch concrete pipe outlet with hydraulically operated gates
- a 40 foot wide spillway, chute and stilling basin
- a surface area of about 460 acres
- a storage volume of about 13,700 acre feet
- over 1,100 acres of associated lands operated as a component of the Colorado State Parks system

The CDOW initially owned the reservoir and approximately 5,200 acre-feet of its storage volume. The owners and operators of the power plant, the Yampa Participants, owned 8,310 acre-feet of water in the reservoir, but none of the

physical facilities. The CDOW shouldered all operational responsibilities and costs, while extraordinary repair costs were shared with the Yampa Participants.

### **Enter the City of Craig**

In the early 1990's the City of Craig negotiated a purchase agreement with the CDOW to obtain Elkhead Reservoir for an enhanced emergency water supply and improved recreational opportunities. The agreement, which included land exchanges between the two parties, also stipulated that the Yampa Participants could keep their water in the reservoir. In addition, Craig gained about 1,680 acre feet of active storage for emergency municipal usage, and upgrades were made to the reservoir's recreational facilities.

Since the selling price for the reservoir was based on the size of the active storage pool being purchased by the City of Craig, the reservoir was drained in 1991 in order to map the reservoir's basin and measure the storage capacity. In the process of draining the reservoir, many non-native fish stocked by CDOW were released into the Yampa River and have yet to be replaced.

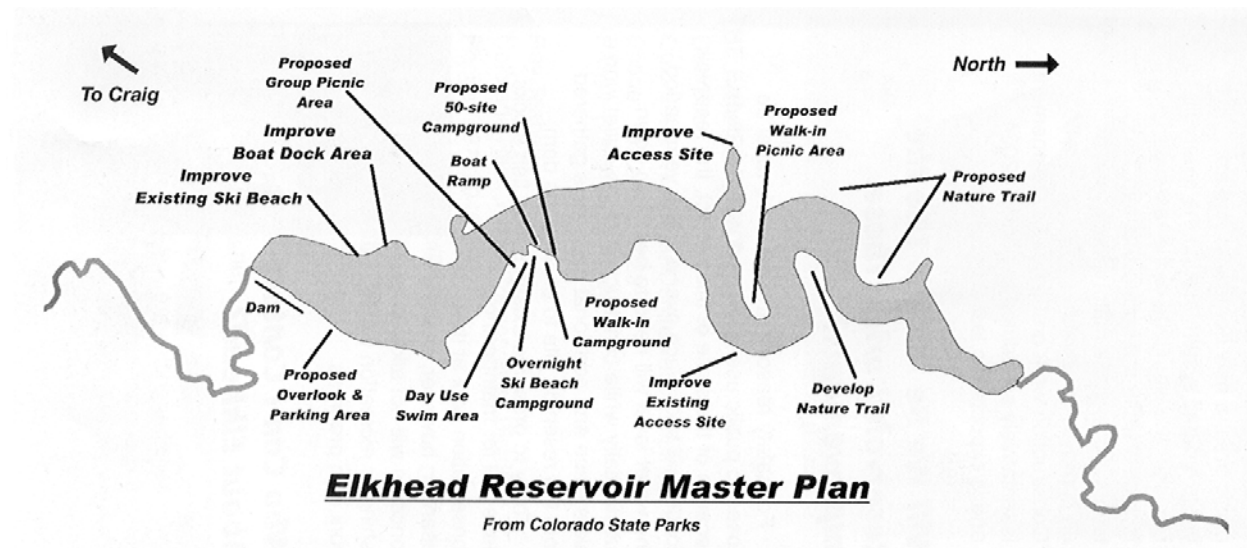
The transfer of the reservoir and associated property to the City of Craig was recently completed, fulfilling the purchase agreement initiated in 1990. The City of Craig now owns the former CDOW pool. Surveys performed in 2002 indicate that Craig owns 4,615 acre-feet of water and the Yampa Participants own 8,522 acre-feet. The City of Craig has assumed all operational responsibilities and costs and extraordinary repair costs will continue to be shared with the Yampa Participants.

### **Proposed enlargement**

An enlargement of Elkhead Reservoir has been under consideration for some time. In 1985, the Colorado River Water Conservation District (River District), CDOW and Colorado Water Conservation Board (CWCB) considered enlarging Elkhead Reservoir an additional 5,000 acre feet in conjunction with a project to repair the dam's spillway. The State Engineer's Office had concerns that the spillway was inadequate to pass a "Probable Maximum Flood" flow and required revision. Although drawings and specifications had been submitted to the State Engineer for review and approval, this project was subsequently shelved.

Enlargement of Elkhead Reservoir is again being pursued to provide storage water for the recovery of endangered fish species in the Yampa River and to meet

existing and future human water supply needs. After exploring potential new sites and enlargement of the existing reservoirs in the basin for these purposes, the enlargement of Elkhead Reservoir was deemed to be the most practical water supply opportunity.



### Emergence of Endangered Fish Issues in the Yampa River

The Yampa and Green rivers have historically been home to several native fish species, including four which are now protected under the federal Endangered Species Act: the Colorado pikeminnow, the razorback sucker, the humpback chub and bonytail. The Endangered Species Act (ESA) wields significant regulatory powers that govern the human use of habitats occupied by listed species. In the case of fish living in rivers, the act of depleting water can cause “harm” to the listed species and is therefore regulated under ESA. In the Colorado River system, the U.S. Fish and Wildlife Service (USFWS) was faced with the reality that humans need the same water that native fishes have historically enjoyed. The USFWS found itself in the position of needing to limit or eliminate river depletions if they could not otherwise provide for the protection of the listed fishes.

In 1988, after four years of discussions and negotiations dealing with endangered fish species issues, an agreement was made between Colorado, Utah, Wyoming, the Federal government, water users, and the environmental community to establish the Recovery Implementation Program for Endangered Fishes of the Upper Colorado (Recovery Program). The basic objective of the Recovery Program is to take actions that will lead to the establishment of sustainable populations of the listed fishes while water continues to be developed for human

uses consistent with Colorado state law. (For more information on the recovery program, consult their website at [www.r6.fws.gov/crrip](http://www.r6.fws.gov/crrip)).

The Recovery Program pursues recovery of the endangered fish more actively than required by the ESA, which is designed only to avoid jeopardy to the listed species and does not specifically target full recovery of species. Recovery Program actions include: research and data collection; habitat protection (including flow protections established by state law); propagation (hatchery raising and stocking listed fishes); and control of competing non-native fishes. The Recovery Program has long been interested in the Yampa River due to its large populations of listed fishes and because river conditions and flow patterns have not been as significantly altered by human uses as other river basins have. This makes the Yampa River a good candidate for recovery efforts to be successful.

Part of the responsibility of the USFWS under ESA is the determination of the amount of habitat that should be protected for listed species. In the case of terrestrial species, protected habitat is often considered in the context of acres of forest or sagebrush or other habitat on land. In the case of fish, the amount of water flowing in the river is a key element of their habitat requiring protection. The USFWS is charged under ESA with making recommendations of particular flow amounts required to sustain populations of the listed fishes. In the Yampa River, these recommendations have evolved over the last several years. An update of the flow recommendations for the Yampa River and the first round of flow recommendations for the Little Snake River are due from the USFWS in the spring of 2003.

The primary objectives of the USFWS flow recommendations are to preserve the high ratio of peak (spring runoff) flows to base (late summer, winter) flows in order to provide sufficient habitat maintenance and spawning cues, as well as to maintain minimum base flows in the driest times. The water community, led by the River District and the CWCB, participated in the process of determining low flow needs of the fishes, protection strategies, availability of water for additional human development and alternatives for providing supplemental fish water from reservoirs.

### **The Yampa Management Plan**

The Yampa Management Plan is being developed by the U.S. Fish and Wildlife Service (USFWS) to recognize endangered fish recovery actions specific to the Yampa River Basin, as well as anticipated levels of human water depletions in

Colorado and Wyoming. The Yampa Management Plan includes: non-native fish management, flow augmentation, stocking of endangered fish species and habitat protections and enhancements. The activities set forth under the Yampa Management Plan will be implemented under the Recovery Program's Recovery Action Plan (RIPRAP). The USFWS and the states of Colorado and Wyoming will enter into an agreement to put the Yampa Management Plan into effect.

The Recovery Program provides generally for the “recovery of the listed fishes while allowing water development to proceed under State law.” To achieve this objective, the Recovery Program has implemented a “recovery action plan,” also known as RIPRAP, which charts out strategic actions for the recovery of the endangered fish species to population levels that are no longer considered endangered and lead to their removal from the federal endangered species list. In the late 1980's and early 1990's, protection of flows in the Yampa River for the listed fishes focused around acquiring the water rights for the proposed Juniper Dam and Reservoir Project and converting these rights to instream flows. The Juniper rights would control the stream flow in the Yampa River basin, but would also be senior to many water rights with priorities after 1954. Since the use of the Juniper water rights for instream flows would not adequately meet the needs of both fish and human uses, that approach was abandoned. Another approach, using minimum instream flow rights assigned to the CWCB for the protection of the listed fishes, was also shelved in favor of directly supplying the water which the fish need for low flow maintenance out of reservoir storage and later considering protections for peak flows, if necessary.

In the early 1990's, the USFWS recommended flows for the Yampa River which would have required augmenting existing flows with as much as 57,000 acre feet of water released from storage in the worst years and an average of 17,000 acre feet annually. Providing this additional amount of water would have required the enlargement of both Elkhead and Stagecoach Reservoirs. These flow recommendations were reconsidered after more was learned about the specific habitat needs of the listed fishes in the Yampa River basin. The current flow management strategy includes providing minimum base flows in the driest years with 7,000 acre-feet of water from an enlarged Elkhead Reservoir (5,000 acre feet for use annually, 2,000 acre-feet for use as needed). The peak flow needs of the fish will be met by the relatively unaltered Yampa River spring runoff.

These new stream flow regimes are part of the most recent Yampa River Management Plan entitled, Management Plan for Endangered Fishes in the Yampa River Basin - In Light of Current and Future Projected Water Depletions from the

Yampa River Basin, Colorado and Wyoming - DRAFT October 2000. Next draft due April 2003 - see further discussion of this below.

A series of public meetings are scheduled to publicly address this new management plan. Meetings will be held:

Monday May 19, 2003, 7:00 p.m. Centennial Hall, Steamboat Springs

Tuesday May 20, 2003, 7:00 p.m. Little Snake River Library, Baggs, WY

Wednesday May 21, 2003, 7:00 p.m. Shadow Mountain Clubhouse, Craig

### **The Elkhead Enlargement Process**

A key component of the implementation of the Yampa Management Plan as proposed is the enlargement of Elkhead Reservoir to provide storage water to maintain adequate base flows in the Yampa River below the Maybell Ditch for endangered fish species. Enlarging Elkhead Reservoir can also help meet existing and future human water supply needs. A thorough study determined that enlarging Elkhead Reservoir would be the most satisfactory option to meet these management plan objectives.

#### **Advantages of enlarging Elkhead Reservoir:**

- Elkhead Creek has an annual yield of approximately 64,000 acre-feet of water, 90% of which comes in the runoff months of April, May and June. The water supply is sufficient to assure that an enlarged reservoir, with a capacity of 25,000 acre feet, will fill even under drought conditions.
- The basin in which Elkhead Reservoir resides is a relatively steep-sided bowl that allows an increase of capacity without inundating a significant amount of additional land. Impacts to neighboring lands and existing wetlands will be minor.
- The dam site at Elkhead Reservoir readily permits expansion of storage capacity.
- Water released from Elkhead Reservoir for fish flow augmentation will experience less transit loss and will allow closer management of the releases necessary to meet targets than other reservoirs situated higher in the basin (e.g. Steamboat Lake, Stagecoach Reservoir).

### Issues we are aware of related to enlargement of Elkhead Reservoir:

- Inundation of the existing wetlands and other unique habitat (e.g. willow shrub habitat) will have to be mitigated by constructing or enhancing such habitat elsewhere on site.
- Rights of way will need to be acquired from the Colorado State Land Board and a few private landowners to complete the reservoir expansion.
- The fishery in Elkhead Reservoir, which consists of many non-native sport fish, will require management in accordance with the Yampa River Aquatic Management Plan and the associated Lake Management Plan prepared by CDOW. A fish containment net to screen the outlet works of the reservoir is being included in the enlargement planning, engineering and financing process to support these management strategies. The non-native fish containment strategy is under review by the Recovery Program, and a study to determine what fish are being escaping and when is scheduled for 2003 and 2004.
- During the reservoir's enlargement, the reservoir will be drawn down to facilitate construction of a new outlet works and to provide access to borrow material for the earthen dam from within the reservoir basin. A "conservation pool" of water will remain in the reservoir while the new, tunneled outlet works are being constructed to maintain the existing stock of fish.
- The reservoir and related properties will not be open for public use during construction and no fishing in the conservation pool will be permitted because of safety considerations.
- Moffat County Road 28 will be closed from the east to the west ends of the dam crest while the dam is being reconstructed. However, the old county road across the reservoir basin will be refurbished and maintained as a reduced speed detour for the duration of the construction activity. Without a detour across the reservoir basin some Routt County residents east of Elkhead Creek would have had as much as 20 miles added to their drive to Craig.



- The condition of the Elkhead Creek streambed below the reservoir has been a concern to local property owners. What impacts the reservoir enlargement will have on creek stage stability and erosion will be considered in the impact analyses. Opportunities for the public to address the existing condition of Elkhead Creek below the reservoir are being explored, however no local sponsorship or matching funding have yet been secured for this effort.
- The recreation area master plan prepared by Colorado Division of Parks and Outdoor Recreation makes a substantial commitment to improving recreation facilities at Elkhead Reservoir. State Parks, the River District, City of Craig and Colorado State Parks will work closely to implement the recreation master plan, influencing decisions such as where borrow areas are developed and how they are reclaimed.

### **Meeting Water Needs for Both Humans and Fish**

The enlargement of Elkhead Reservoir will benefit more than endangered fish. In the early 1990's, the effort to protect instream flows for endangered fish was accompanied by development of long-term growth projections for human water use in the Yampa River basin. Water users wanted to make sure sufficient water would be available to accommodate human needs, as projected over the next 50 years, under any endangered fish recovery efforts. When the instream flow needs for the listed fishes was reconsidered, so were the growth projections. An extensive process, including several public meetings and interface with the Yampa River Basin Partnership and local business and community leaders, resulted in revised 50-year demand projections similar to the earlier ones.

The concept of an overall basin-wide consultation on endangered fish recovery and water development needs was employed. First launched in the Yampa River Basin, this concept was next directed towards Colorado River endangered fish recovery efforts resulting in the 15-Mile Reach Programmatic Biological Opinion (PBO). The concept of a PBO was new and took time to develop. In a nutshell, a PBO allows the impacts of basin-wide water use and recovery efforts to be considered together. Under ESA, the USFWS must issue an “opinion” on the effects of these actions on endangered fish species. Because more of Colorado’s water development has occurred on the Colorado River, there was a tremendous need to resolve the issues surrounding long-term water development needs and fish recovery actions on this stretch of river first. After three years of diligent work,



and while the Yampa process focused on redefining the fish flow and human development needs, the 15-Mile Reach PBO was completed in December 1999, affording water users on the Colorado River “relief” from the effects of ESA regulation.

After completion of the 15-Mile Reach PBO, the focus returned to the Yampa River basin. Through close coordination with the Yampa River Basin Partnership (YRBP) many issues were identified and solutions explored. A two-day facilitated work session held in August 2000 recognized the many issues and agreed upon solutions. Including Federal, State, and local officials as well as members of the community in the session ensured supportable and workable solutions.

One issue, the future human water development component, was assigned to a smaller work group for further study. Water development in both Colorado and Wyoming were included in Colorado’s Yampa River basin component of the Colorado River Decision Support System (CRDSS) along with agreed upon endangered fish base flow targets to arrive at a flow augmentation strategy. The main components of the strategy are:

- Minimum low flow targets on the Yampa River at the Maybell gage which should ensure that base flows remain above 93cfs in all but the driest years.
- An initial proposal to lease water from Steamboat Lake was eliminated in favor of using an enlarged Elkhead Reservoir to provide additional water for flow augmentation. Recreational impacts and high transit losses made the delivery of the fish water from Steamboat Lake difficult in the years it would be needed most.
- Recovery Program participation in the enlargement of Elkhead Reservoir has been modified to provide 7,000 acre-feet of water to the listed fishes when needed, instead of their earlier commitment for 3,700 acre feet. Five thousand acre-feet of water will be provided by the CWCB under its obligations to the endangered fish recovery program through a water supply contract with the River District.
- An additional 2,000 acre-feet of storage water, up from an initial estimate of 1,300, will be leased to the Recovery Program by the River District for flow augmentation (initially from the enlargement pool in Elkhead Reservoir).

## **Non-Native Fish Control**

Control of competing non-native fishes is a key component of the recovery strategy for the listed fishes and is probably even more important than flow-related measures. In addition to augmentation of base flows to recover listed fishes, management of Elkhead Reservoir will also be influenced by the implementation of the State of Colorado's Aquatic Management Plan for the Yampa River, which calls for control of non-native fish species. The Colorado Division of Wildlife, with considerable public input and close coordination with the YRBP and the Recovery Program, prepared the Yampa River Basin Aquatic Management Plan. In the Yampa River Basin Aquatic Management Plan, non-native fish control takes the form of screening all waters, such as reservoirs and fish ponds, that have warm water non-native fish in them to prevent their escape; removal of some non-native fish (Northern Pike, Channel Catfish, Small Mouth Bass, Carp) from the Yampa River to screened receiving waters; and screening of potential Northern Pike spawning areas along the river channel to reduce their spawning success.

The Stocking Plan for Endangered Fish Species in Colorado, published October 15, 2001, is an essential part of the strategy for increasing endangered fish numbers. Achieving endangered fish population target numbers while maintaining a local sport fishery is a significant challenge that continues to be discussed and options explored. Currently, there is a need to meet the public demand for more off-river fishing opportunities and for additional receiving waters for the non-native northern pike, small mouth bass and channel catfish removed from the river. The Colorado Division of Wildlife is seeking ponds into which salvaged fish can be stocked and made accessible to the public. Please contact the CDOW area managers (Susan Werner at 970-871-2842 or email [susan.werner@dowsts.state.co.us](mailto:susan.werner@dowsts.state.co.us) or Dan Prenzlowl at 970-878-6061 or email [dan.prenzlowl@state.co.us](mailto:dan.prenzlowl@state.co.us)) with any options you may be able to offer.

## **Process, Process, Process**

A lot of effort went into the consensus formed at the work session in August 2000. More work has been done since to address some of the more significant issues such as the water management strategy and non-native fish management. Unfortunately, as much as we have worked to bring the community together on the development of a management plan and the enlargement of Elkhead Reservoir, some formal processes must be completed to implement the Yampa River

## Management Plan.

Two somewhat similar and parallel public processes will be required to implement the Yampa River Management Plan and to permit the associated enlargement of Elkhead Reservoir. The driving force behind these public processes is compliance with the National Environmental Policy Act (NEPA) disclosure requirements. The NEPA process is triggered by any federal action, such as a funding agreement or issuance of a federal permit. Both the management plan itself and the enlargement of Elkhead Reservoir require distinct federal actions.

The NEPA process requires rigid adherence to a detailed public process to identify all potential alternatives to solve the identified problem (“the need”), and to identify the preferred alternative that will meet the need and serve the identified purposes. NEPA requires the disclosure of impacts but not necessarily mitigation of all impacts. The NEPA disclosure and documentation process can take several paths as either:

- a Categorical Exclusion when there is no associated significant Federal action,
- a Finding of No Significant Impact (FONSI) resulting from any Federal Action,
- an Environmental Assessment (EA) when the impacts are discrete and of limited scale,
- an Environmental Impact Statement (EIS) when the impacts and options of any action are many.

Endangered species issues further complicate the process. A component of the NEPA process is the consideration of impacts to federally listed endangered species, and this takes the form of a biological assessment (BA) and a Section 7 Consultation (Section 7 of the Endangered Species Act). As required by Section 7, the USFWS uses the biological assessment to consider the impacts to all endangered species (terrestrial, aquatic, plants, animals, etc). Any action which may affect or cause jeopardy to a listed species must have a “reasonable and prudent alternative” (RPA) to be allowed to proceed. The Recovery Program and the Yampa Management Plan provide the RPA for impacts of by water depletions by humans.

## **The Yampa Management Plan Process**

The USFWS development of the Yampa Management Plan is nearly complete and the final draft will soon be available for public consideration. Notice of its availability should be published in the Federal Register by the end of April. The Management Plan will be discussed at the public meetings in Steamboat, Baggs and Craig listed previously. Copies of the Management Plan can be obtained by contacting Gerry Roehm of the Upper Colorado River Endangered Fish Recovery Program at (303) 969-7322, ext. 272, or by e-mailing him at [Gerry\\_Roehm@fws.gov](mailto:Gerry_Roehm@fws.gov).

The Management Plan accommodates existing water use, including increases of 30,000 acre-feet for future use in Colorado (plus a possible additional 20,000 acre feet) and 23,000 acre feet of future use in Wyoming. The Management Plan includes habitat improvements along the Yampa and Green Rivers, base flow augmentation of up to 7,000 acre feet, control of non-native fishes, fish passage over diversion structures where necessary and, Recovery Program funding of all necessary activities related to existing water use. The Federal action which compels a NEPA review of the Management Plan is the planned execution of an agreement between the USFWS, the Recovery Program and the States of Colorado and Wyoming to implement the plan, including allowing /accommodating the existing and future water depletions.

The NEPA process on the management plan was begun with “scoping” meetings in Craig and Steamboat Springs in Colorado and in Baggs, Wyoming on November 27 - 29, 2001. Public comments were used to frame or “scope” important issues and suggest alternatives to be considered in the environmental impact review. The Management Plan is being redrafted to reflect these scoping comments.

Once the scoping is completed, the USFWS will analyze the alternatives and identify impacts. Impacts to endangered species (Ute Ladies’ Tresses, Black-footed Ferret, Colorado Pikeminnow, etc.) will be disclosed and evaluated and a “reasonable and prudent alternative” identified.

The USFWS hopes to be able to complete an Environmental Assessment on the implementation of the Yampa Management Plan with a record of decision and a programmatic biological opinion on the endangered species impacts by September 2003.

### **Other Issues involving Elkhead Expansion**

While the NEPA process on the Yampa Management Plan progresses, the NEPA process on the enlargement of Elkhead Reservoir to supply flow augmentation will be initiated by the filing of a Clean Water Act section 404 Permit application with the U.S. Army Corps of Engineers to gain permission to place the fill for the dam embankment enlargement in Elkhead Creek.

### **Administrative Issues**

Many issues regarding dam ownership, cost sharing, water delivery and long term operations must be resolved before Elkhead enlargement can move forward. The initial discussions with the City of Craig, the River District, Colorado Division of Wildlife, the Recovery Program and the Colorado State Land Board (CSLB) have yielded a long list of tasks that must be completed. Generally these are:

- Completion of the purchase agreement for Elkhead Reservoir between the City of Craig and CDOW, Craig acquires reservoir and associated property rights from CDOW. (Completed Fall 2002.)
- Completion of an inter-governmental agreement between the River District and Craig to facilitate a joint venture for ownership and expansion of the reservoir. Phase I, allowing permitting and design activities, completed in 2002. Phase II, allowing construction and operations, completion anticipated for Spring 2003.
- Amending a Colorado State Land Board right-of-way to allow for reservoir expansion.
- Completion of a Memorandum of Agreement between the River District and the Recovery Program to fund the portion of the reservoir enlargement dedicated to augmenting fish flows. Principles were agreed to in January 2003. The agreement itself is still under development. The endangered fishes will benefit from a water supply contract between the River District and the State of Colorado for 5,000 acre-feet of Elkhead Reservoir water. This water supply contract will be for the purposes of the recovery and maintenance of native fishes through low flow augmentation and delivered to the CWCB under its instream flow statute. The funding for this portion of the reservoir enlargement will come from the CWCB construction

fund and the Recovery Program. In addition to the 5,000 acre-feet, a lease between the River District and the USFWS for 2,000 acre-feet will allow additional deliveries when they are needed.

- Completion of an agreement with the Yampa Participants, who own and operate the Craig Station power plant and have water in Elkhead Reservoir, to allow the enlargement. Final drafting underway, completion expected in April 2003.
- Purchase of the necessary private lands. Discussions with land owners ongoing.
- Obtain approvals from Routt and Moffat Counties, as necessary.
- Explore coordinating of the development of recreation facilities by Colorado Department of Parks and Outdoor Recreation while dam construction is underway.

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### **Glossary of abbreviations:**

- **BO** – Biological Opinion
- **CDO**W – Colorado Division of Wildlife
- **CFS** – Cubic Feet per Second
- **CRDSS** – Colorado River Decision Support System
- **CRWCD** – Colorado River Water Conservation District
- **CSLB** – Colorado State Land Board
- **CWA** – Clean Water Act
- **CWCB** – Colorado Water Conservation Board
- **EA** – Environmental Assessment
- **EIS** – Environmental Impact Statement
- **ESA** – Endangered Species Act
- **FONSI** – Finding of No Significant Impact
- **NEPA** – National Environmental Policy Act
- **River District** – Colorado River Water Conservation District, also listed as CRWCD
- **PBO** – Programmatic Biological Opinion
- **USACOE** – United States Army Corps of Engineers
- **USFWS** – United States Fish and Wildlife Service
- **YRBP** – Yampa River Basin Partnership

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